

CLAIMS

What is claimed is:

1. An integrated optical emitter device, comprising:
a substrate;
an emitter mounted to said substrate;
a molded cup that surrounds said emitter and that is bonded to said substrate; and
a molded encapsulation layer that encapsulates said emitter and that is bonded to said molded cup.
2. The integrated optical emitter device of claim 1, wherein said substrate is a printed circuit board.
3. The integrated optical emitter device of claim 1, wherein said emitter is selected from the list consisting of: an edge emitting diode and a surface emitting diode.
4. The integrated optical emitter device of claim 1 wherein said molded cup and molded encapsulation layer are formed of molded epoxy.
5. The integrated optical emitter device of claim 1 wherein said molded cup is at least semi-reflective.
6. The integrated optical emitter device of claim 1 wherein said molded encapsulation layer is shaped to direct light emitted by said emitter.
7. The integrated optical emitter device of claim 6 wherein said molded encapsulation layer is elliptical.

8. The integrated optical emitter device of claim 6 wherein said molded encapsulation layer reduces a difference in beam divergence between a fast-axis and a slow-axis of said emitter.

9. The integrated optical emitter device of claim 1 wherein said encapsulation layer is formed from clear epoxy.

10. The integrated optical emitter device of claim 1 wherein said molded cup possesses a plurality of discrete transitions.

11. A method for fabricating an integrated optical emitter device, comprising:
providing a substrate;
transfer molding a cup on said substrate to form a recess;
attaching an emitter to the substrate within said recess; and
transfer molding an encapsulation layer around said emitter that is attached within said recess, wherein said encapsulation layer is bonded to said cup.

12. The method of claim 11 wherein said transfer molding a cup comprises positioning a transfer mold tool.

13. The method of claim 12 wherein said transfer mold tool includes a plurality of discrete transitions.

14. The method of claim 12 wherein said transfer mold tool possesses an elliptical contour.

15. The method of claim 11 wherein said transfer molding a cup utilizes epoxy material that is at least semi-reflective.

16. The method of claim 11 wherein said transfer molding an encapsulation layer utilizes clear epoxy to form said encapsulation layer.

17. The method of claim 11 wherein said transfer molding an encapsulation layer forms a lens-shape to direct light emitted from said emitter.

18. The method of claim 17 wherein said encapsulation layer possesses an elliptical shape and wherein said elliptical shape is aligned to reduce a difference in axis beam divergence from said emitter.

19. An integrated optical emitter device, comprising:
a printed circuit board (PCB);
an emitter mounted to said PCB;
a molded epoxy cup that surrounds said emitter and that is bonded to said PCB, wherein said molded epoxy cup is at least semi-reflective; and
a molded epoxy encapsulation layer that encapsulates said emitter and that is bonded to said molded epoxy cup.

20. The integrated optical emitter device of claim 19, wherein said molded encapsulation layer possesses an elliptical shape and wherein said elliptical shape is aligned to reduce a difference in axis beam divergence from said emitter.